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Application Date	8th day of the 12th month of the 88th ~~year of~~ the Republic of China (AD December 8, 1999)
Case Number	88220901
Category	~~G06F 3/022~~, 13/12

(Spaces Above For Office Use Only)

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Publication Copy

Patent Description – New Utility 478617		
I. Invention/New Utility Title	Chinese	Keyboard capable of receiving signals
	English	
II. Inventor/Creator	Name	Kuo Chun-Tze
	Citizenship	Republic of China
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III. Applicant	Name (Company)	Hsu Lee Company, Ltd.
	Citizenship	Republic of China
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	Name of Representative	Sung Kung-Yuen

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IV. Abstract of the Creation in Chinese (Title of Creation:)

A Keyboard Capable of Receiving Signals

This Creation relates to a type of keyboard capable of receiving signals, wherein the keyboard is equipped with a transmitter/receiver module capable of receiving signals from at least one I/O unit. The said transmitter/receiver module is connected to a microprocessor in the internal circuit unit of the keyboard. The programs in the said microprocessor process and recognize the ID codes of the I/O unit. The microprocessor is connected to a universal serial bus (USB) controller, which is connected to a PC by means of a transmission cord. The keyboard thus configured is capable of simultaneously receiving signals from at least one I/O unit. The benefits provided by this Creation include cost saving and space reduction.

Abstract of the Creation in English (Title of Creation:)

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V. Description of the Creation (1st page)

This Creation relates to a type of keyboard capable of receiving signals, in particular, a keyboard capable of simultaneously receiving signals from at least one additional I/O device.

The average keyboard commonly in use is capable of receiving signals from only one input device (for example, a mouse, a trackball, a digital pad, or a joy stick). It is not capable of simultaneously receiving signals from multiple input devices.

In addition, to make a keyboard capable of receiving signals from multiple input devices in a wired transmission mode, the keyboard must be equipped with additional connectors for those devices. This would increase the cost and the space required, and therefore is not economically preferable.

As a result of thorough research and practical application of theories, this Creator has designed a keyboard which is capable of simultaneously receiving signals from multiple I/O devices.

This Creation intends to provide a cost- and space-saving keyboard by installing on the keyboard a transmitter/receiver module which is capable of receiving signals from at least one I/O device. The said transmitter/receiver module is connected to a microprocessor in the internal circuit module of the keyboard. The said microprocessor is linked to a multi-device indicator, a memory unit and a channel selection switch. When the programmed microprocessor recognizes the ID of an I/O device, the user will know which I/O device is working.

To enable the Review Committee to learn more about the features and technical specifications of this Creation, a detailed description – supplemented by drawings -- is provided in the following pages. The drawings, however, are for information and illustration purposes only. They shall not be construed as restrictions on this Creation. The drawings for application examples are provided herein:

The following is a brief explanation of the drawings:

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V. Description of the Creation (2nd page)

Figure 1 is a wiring diagram of this Creation.

Figure 2 is another wiring diagram of this Creation.

Callout numbers and descriptions in the drawings:

1 I/O devices
- 11 Mouse
- 12 Trackball
- 13 Digital pad
- 14 Handwriting pad
- 15 Joy stick
- 16 Microphone

2 Receiver module
3 Keyboard
- 31 Microprocessor
- 32 Memory unit
- 33 USB controller
- 34 Channel selection switch
- 35 Indicator

4 PC
5 Digital signal processor (DSP)
6 Analog/digital conversion circuit
7 External device
8 Transmitter/receiver module

As is shown in Figure 1, this Creation is "a keyboard capable of receiving signals", which consists of a multiple I/O unit (1), a receiver module (2) and a keyboard (3), wherein:

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V. Description of the Creation (3rd page)

The multi-device I/O unit (1) in this Creation may be a mouse (11), a trackball (12), a digital pad (13), a handwriting pad (14), a joy stick (15), a microphone (16), or any other low power product. Each I/O device sends its output signals either to the internal microprocessor (31) in the keyboard (3) in a wired transmission mode or to the receiver module (2) in a wireless transmission mode (for example, IR or RF transmission).

The receiver module (2) may be either an external device or a built-in component in the keyboard (3). Connected to the microprocessor (31) in the internal circuit module of the keyboard, the said receiver module (2) receives the signals from the I/O unit (1) (including the ID codes and other data from the I/O unit), demodulates the signals and sends them to the microprocessor (31). Then, the programmed microprocessor (31) recognizes the ID codes and digitizes the signal data from the receiver module (2).

The internal circuit module of the keyboard comprises a microprocessor (31), a memory unit (32), a USB controller (33), a channel selection switch (34), and a multi-device indicator (35). The output port of the microprocessor (31) is connected to the USB controller (33). The output port of the USB controller (33) is connected to the PC (4) by means of a single transmission cord. The said USB controller (33) transfers, in its own format, the output data from the microprocessor (31) to the PC (4). The microprocessor (31) is also connected to the multi-device indicator (35), which in turn uses different working status indications to tell the user whether the receiver module (2) is receiving signals from the I/O unit (1) and which I/O device is working.

When it receives the signals from the I/O unit (1) (including the ID codes and other data from the I/O unit), the receiver module (2) demodulates the signals and sends them to the microprocessor (31). Then, the programmed microprocessor (31) recognizes the ID codes and digitizes the signal data from the receiver module (2). After that, the digitized data is transferred by the USB controller (33), in its own format, to the PC (4).

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V. Description of the Creation (4th page)

As is shown in Figure 2, this Creation may also use a transmitter/receiver module (8) instead of a receiver module (2). In that scheme, then, the microprocessor (31) is connected to a digital signal processor (DSP) (5). The input port of the digital signal processor (5) is connected to an analog/digital conversion circuit (6).

The said analog/digital conversion circuit (6) converts the audio signals from the external device (7) (such as CD-ROM, headphone, microphone, or speaker) to digitized signals and sends such digitized signals to the digital signal processor (5), which in turn codes the signals and then sends them to the microprocessor (31). The programs in the microprocessor (31) process and recognize the coded signals, which are then sent out by the transmitter/receiver module (8).

In short, the keyboard in this Creation is capable of receiving signals from at least one I/O unit. This special design may also lower the cost and save the space. It conforms to the basic requirements for patent application. Therefore, pursuant to the Patent Law, this Creator is hereby submitting the application for this Creation to protect this Creator's rights. This Creator expects official instructions from the Review Committee of the Intellectual Property Office if it has any questions with regard to the application.

The foregoing is only one of the best application examples of this Creation. The structural features of this Creation go far beyond this example. The following patent application claims shall cover all changes and modifications to this Creation that may be thought of by anyone knowledgeable of the technology employed in this Creation.

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VI. Patent Application Claims

(1) A type of keyboard capable of receiving signals, comprising a keyboard, a transmitter/receiver module and at least one I/O device, wherein the keyboard is equipped with a transmitter/receiver module capable of receiving signals from at least one I/O device, and the said transmitter/receiver module is connected to the keyboard circuit control unit, which operates to indicate which I/O device is working.

(2) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the circuit control unit is equipped with a microprocessor, which is connected to a universal serial bus (USB) controller, which in turn is connected to a PC by means of a transmission cord.

(3) The keyboard capable of receiving signals as described in the second paragraph of the Patent Application Claims, wherein the microprocessor is connected to a multi-device indicator, which uses different working status indications to tell the user from which I/O device the transmitter/receiver module is receiving signals.

(4) The keyboard capable of receiving signals as described in the second paragraph of the Patent Application Claims, wherein the microprocessor is connected to a channel selection switch.

(5) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the I/O unit is a mouse.

(6) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the I/O unit is a trackball.

(7) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the I/O unit is a digital pad.

(8) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the I/O unit is a handwriting pad.

(9) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the I/O unit is a joy stick.

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VI. Patent Application Claims

(10) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the I/O unit is a microphone.

(11) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein each I/O unit may send its output signals to the circuit control unit in a wired transmission mode.

(12) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein each I/O unit may send its output signals to the receiver module in a wireless transmission mode.

(13) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein each I/O unit may send its output signals to the receiver module in an IR transmission mode.

(14) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the receiver module may be installed inside the keyboard.

(15) The keyboard capable of receiving signals as described in the first paragraph of the Patent Application Claims, wherein the receiver module may be connected externally to the keyboard.

(16) The keyboard capable of receiving signals as described in the second paragraph of the Patent Application Claims, wherein the microprocessor may be connected to a digital signal processor, which may be connected to an analog/digital conversion circuit, which in turn converts the audio signals from an external device to digitized signals and sends such digitized signals to the digital signal processor. The digital processor codes the signals and then sends them to the microprocessor. The programs in the microprocessor process and recognize the coded signals, which are then sent out by the transmitter/receiver module.

(17) The keyboard capable of receiving signals as described in the sixteenth paragraph of the Patent Application Claims, wherein the external device may be a CD-ROM.

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VI. Patent Application Claims

(18) The keyboard capable of receiving signals as described in the sixteenth paragraph of the Patent Application Claims, wherein the external device may be a headphone.

(19) The keyboard capable of receiving signals as described in the sixteenth paragraph of the Patent Application Claims, wherein the external device may be a microphone.

(20) The keyboard capable of receiving signals as described in the sixteenth paragraph of the Patent Application Claims, wherein the external device may be a speaker.

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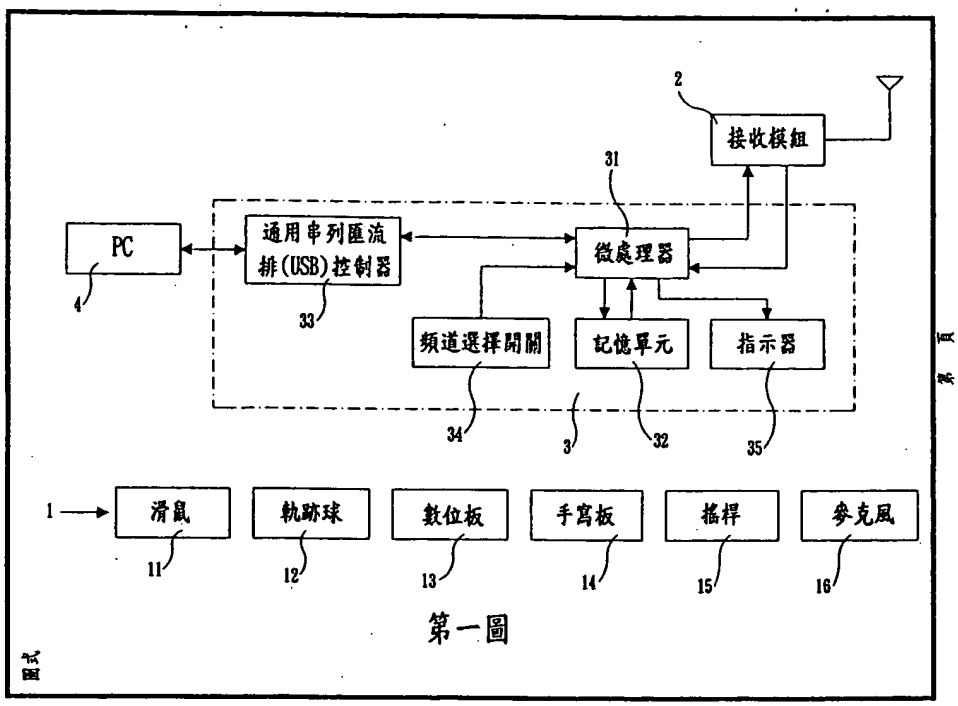
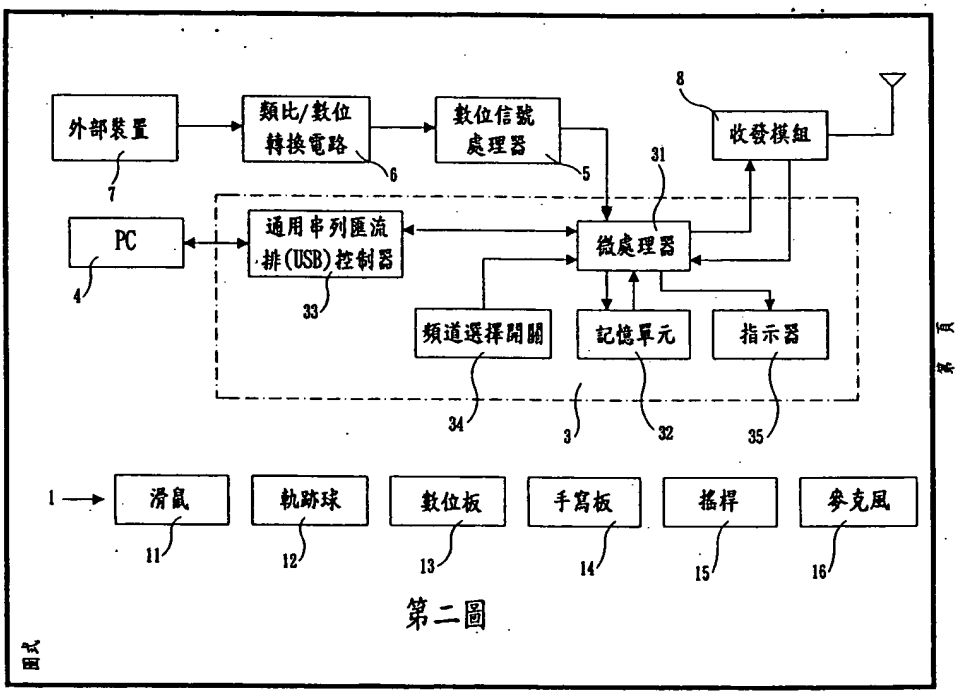


第一圖

Figure 1



第二圖

Figure 2

申請日期	88. 12. 8
案　號	88220901
類　別	G06F 3/023, 12/12

（以上各欄由本局填註）

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~~發明~~ 新型專利說明書478617

一、發明新型名稱	中　文	具接收信號之鍵盤
	英　文	
二、發明創作人	姓　名	郭俊哲
	國　籍	中華民國
	住、居所	台北市敦化南路1段25號10樓
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	國　籍	中華民國
	住、居所（事務所）	台北市敦化南路1段25號10樓
	代表人姓　名	宋恭源

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五、創作說明（ 1 ）

本創作係一種具接收信號之鍵盤，尤指一種可同時接收至少一輸出入單元送出訊號之鍵盤。

按，現有的鍵盤僅能接收單一輸入單元（如：滑鼠、軌跡球、數位板、搖桿．．．．）送出之訊號，並不能同時接收多個不同的輸入單元；

其次，若要使該鍵盤以有線傳輸模式接收多個不同的輸入單元，則於鍵盤本體上要設計適合各輸入單元能嵌合之連接件，如此，耗費相當多成本，且佔用過多空間，並不符合經濟效益。

緣是，本創作人乃特潛心的研究並配合學理之運用，以設計出一能同時接收多個不同的輸出入單元送出訊號之鍵盤。

本創作之一目的，在於提供一種可降低成本及節省空間之鍵盤，其係在鍵盤本體上接設於一能接收至少一輸出入單元送出訊號之收發模組，該收發模組係連接於鍵盤內部電路單元之微處理器，微處理器分別連接於多數指示器、一記憶單元及一頻道選擇開關，透過該微處理器內部程式運作，以判別接收該輸出入單元之識別碼，俾使用者得知是何輸出入單元工作。

為了使　貴審查委員能更進一步了解本創作之特徵及技術內容，請參閱以下有關本創作之詳細說明與附圖，然而所附圖示僅供參考與說明用，並非用來對本創作加以限制者。有關該實施例之附圖為：

圖示簡單說明：

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五、創作說明（ㄧ）

第一圖係本創作之電路架構圖。

第二圖係本創作之另一電路架構圖。

圖號與名稱說明：

1 輸出入單元

11 滑鼠

12 軌跡球

13 數位板

14 手寫板

15 搖桿

16 麥克風

2 接收模組

3 鍵盤

31 微處理器

32 記憶單元

33 USB 控制器

34 頻道選擇開關

35 指示器

4 PC

5 數位信號處理器(DSP)

6 類比／數位轉換電路

7 外部裝置

8 收發模組

請參閱第一圖所示，本創作係一種「具接收信號之鍵盤」，包括一多數輸出入單元1、一接收模組2及一鍵盤3等單元；其中：

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五、創作說明(7)

多數輸出入單元1在本創作實施例中可為滑鼠11、軌跡球12、數位板13、手寫板14、搖桿15、麥克風16・・・等低功率之產品，各輸出入單元係以有線將其輸出訊號傳送至鍵盤3內部單元之微處理器31，或無線傳輸模式（如IR傳輸模式或RF傳輸模式）將其輸出訊號傳送至接收模組2。

接收模組2係外接(或內建)於鍵盤3本體上，且與其內部電路單元之微處理器31連通，該接收模組2係接收自輸出入單元1送出之訊號（包含各輸出入單元之識別碼、資料・・・），並將該訊號解調，然後，傳送至微處理器31，此時，該微處理器31即透過其內部程式運作，判別該識別碼，並將自接收模組2輸出之訊號編碼成數位信號資料。

鍵盤內部電路單元係由微處理器31、記憶單元32、USB控制器33、頻道選擇開關34、多數指示器35・・等連接組成，其中微處理器31輸出埠連接於USB控制器33，USB控制器33輸出埠係藉單一傳輸線連接於PC 4，該USB控制器33係以其格式將自微處理器31輸出之資料送入PC 4中，且微處理器31連接於多數指示器35，透過指示器35工作狀態，以告知使用者得知該接收模組2是否有接收到輸出入單元1送出之訊號；以及是何輸出入單元工作。

當接收模組2接收到自輸出入單元1送出之訊號（包含各輸出入單元之識別碼、資料・・・）時，會將該

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五、創作說明（ψ）

訊號調變，並傳送至微處理器31，該微處理器31即透過其內部程式運作，判別該識別碼，並將自接收模組2輸出之訊號編碼成數位信號資料，然後，將該數位信號透過USB 控制器33以其格式送至PC 4。

請參閱第二圖所示，本創作亦可以一收發模組8取代接收模組2，且微處理器31連接於一數位信號處理器(DSP)5，數位信號處理器5輸入連接於一類比／數位轉換電路6；

該類比／數位轉換電路6係將自外部裝置7（如CD－ROM、耳機、麥克風、喇叭）輸出之聲音信號轉換成數位訊號，並將該數位信號輸出至數位信號處理器31予以編碼，然後，傳送至微處理器31，透過其內部程式處理，以識別該編碼信號，並經由收發模組8傳送出。

綜上所述，透過本創作特殊設計，能使鍵盤同時接收至少一輸出入單元送出之訊號，且能降低成本，節省空間，完全符合專利申請要件，故爰依專利法提出申請之，請詳查並准予本案，以保障創作者之權益，若　鈞局之貴審查委員有任何稽疑，請不吝來函指示。

按，以上所述，僅為本創作的最佳之一具體實施例，惟本創作之構造特徵並不侷限於此，任何熟悉該項技藝者在本創作之領域內，可輕易思及之變化或修飾皆可涵蓋在以下本案之專利範圍。

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四、中文創作摘要（創作之名稱：　　）

具接收信號之鍵盤

本創作係一種具接收信號之鍵盤，其係在鍵盤本體上設有一能接收至少一輸出入單元送出訊號之收發模組，收發模組係連接於鍵盤內部電路單元之微處理器，透過該微處理器內部程式運作，以判別接收該輸出入單元之識別碼，該微處理器連接於一通用串列匯流排（USB）控制器，USB 控制器係藉一傳輸線連接於PC，藉此，俾該鍵盤能同時接收至少一輸出入單元送出之訊號，且能降低其於製程上成本及節省空間等諸多優點。

英文創作摘要（創作之名稱：　　）

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六、申請專利範圍

1．一種具接收信號之鍵盤，包括一鍵盤、一收發模組及至少一輸出入單元，其中在鍵盤上接設有一能接收至少一輸出入單元送出訊號之收發模組，該收發模組係連接於鍵盤之電路控制單元，透過該電路控制單元之運作，以得知是何輸出入單元工作。

2．如申請專利範圍第1項所述之具接收信號之鍵盤，其中電路控制單元中設有一微處理器，該微處理器連接於一通用串列匯流排(USB)控制器，通用串列匯流排(USB)控制器係藉一傳輸線連接於一電腦。

3．如申請專利範圍第2項所述之具接收信號之鍵盤，其中微處理器可連接多數指示器，透過該等指示器不同顯示，供使用者得知收發模組接收到是何種輸出入單元。

4．如申請專利範圍第2項所述之具接收信號之鍵盤，其中微處理器可連接於一頻道選擇開關。

5．如申請專利範圍第1項所述之具接收信號之鍵盤，其中輸出入單元可為一滑鼠。

6．如申請專利範圍第1項所述之具接收信號之鍵盤，其中輸出入單元可為一軌跡球。

7．如申請專利範圍第1項所述之具接收信號之鍵盤，其中輸出入單元可為一數位板。

8．如申請專利範圍第1項所述之具接收信號之鍵盤，其中輸出入單元可為一手寫板。

9．如申請專利範圍第1項所述之具接收信號之鍵

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六、申請專利範圍

盤，其中輸出入單元可為一搖桿。

10．如申請專利範圍第1項所述之具接收信號之鍵盤，其中輸出入單元可為一麥克風。

11．如申請專利範圍第1項所述之具接收信號之鍵盤，其中各輸出入單元可採有線模式將其輸出訊號傳送至電路控制單元。

12．如申請專利範圍第1項所述之具接收信號之鍵盤，其中各輸出入單元可採無線模式將其輸出訊號傳送至接收模組。

13．如申請專利範圍第1項所述之具接收信號之鍵盤，其中各輸出入單元可採紅外線模式將其輸出訊號傳送至接收模組。

14．如申請專利範圍第1項所述之具接收信號之鍵盤，其中收發模組可內建於鍵盤本體內。

15．如申請專利範圍第1項所述之具接收信號之鍵盤，其中接收模組可外接於鍵盤本體上。

16．如申請專利範圍第2項所述之具接收信號之鍵盤，其中微處理器可連接於一數位信號處理器，數位信號處理器連接於一類比／數位轉換電路，該類比／數位轉換電路係將自外部裝置輸出之聲音信號轉換成數位訊號，並將該數位信號輸出至數位信號處理器編碼，然後，傳送至微處理器，透過其內部程式處理，以識別該編碼信號，並經由收發模組傳送出。

17．如申請專利範圍第16項所述之具接收信號

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六、申請專利範圍

之鍵盤，其中該外部裝置可為一 CD－ROM 。

18．如申請專利範圍第16項所述之具接收信號之鍵盤，其中該外部裝置可為一耳機。

19．如申請專利範圍第16項所述之具接收信號之鍵盤，其中該外部裝置可為一麥克風。

20．如申請專利範圍第16項所述之具接收信號之鍵盤，其中該外部裝置可為一喇叭。

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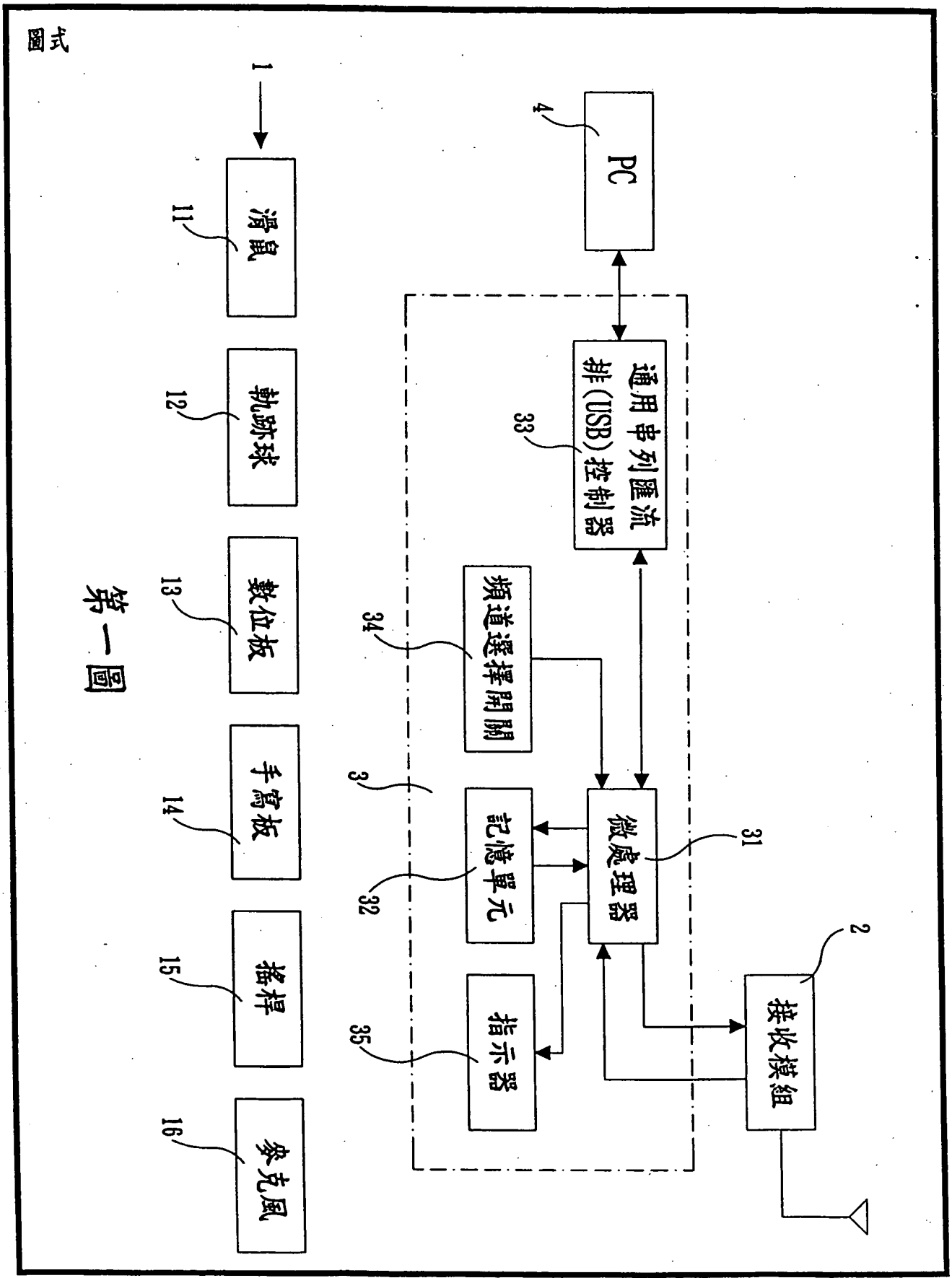
式圖



第一圖

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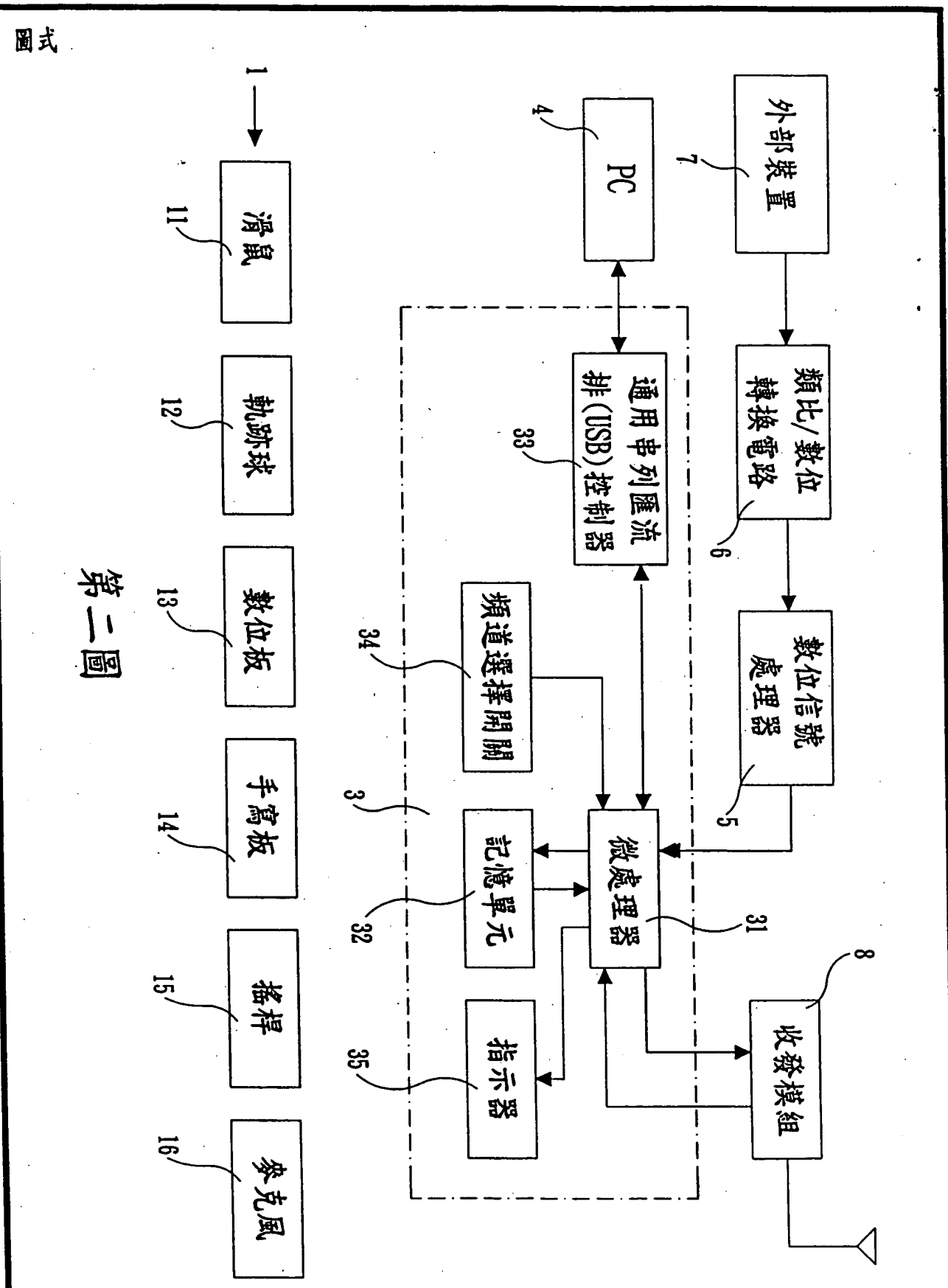
外部裝置
7
PC
4
類比/數位轉換電路
6
通用串列匯流排(USB)控制器
33
數位信號處理器
5
頻道選擇開關
34
記憶單元
32
微處理器
31
指示器
35
收發模組
8
3
1
滑鼠
11
軌跡球
12
數位板
13
手寫板
14
搖桿
15
麥克風
16

第二圖